

REMARKS

Claims 1-31 are pending in this application. By this Amendment, claims 1-2, 4-5, 10, 13-14, 16 and 18 are amended and claims 19-31 are added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

As claim 14 is not rejected over the prior art, Applicants respectfully submit that claim 14 defines patentable subject matter.

A. The Office Action rejects claim 14 under 35 U.S.C. §112, second paragraph. Applicants respectfully submit the above amendments obviate the grounds for the rejection. Withdrawal of the rejection of claim 14 under 35 U.S.C. §112 is respectfully requested.

B. The Office Action rejects claims 1-8, 11-13, 16 and 18 under 35 U.S.C. §102(b) over U.S. Patent No. 5,571,148 to Loeb. The rejection is respectfully traversed.

With respect to claim 1, Applicants respectfully submit that Loeb fails to disclose every claimed feature as required under 35 U.S.C. §102. For example, Loeb fails to disclose a signal generator that generates a second signal capable of causing pseudospontaneous activity in an auditory nerve as recited in claim 1.

The Office Action appears to assert that a modulated power signal being a carrier signal between 100 KHz and 50 MHz discloses a second signal capable of causing pseudospontaneous activity as recited in claim 1. See column 11, lines 9-16 and column 12, lines 1-15 in Loeb. See Item 1, lines 2-5 on page 2 of the Office Action. However, the carrier signal is removed by the multi channel simulator of Loeb. Loeb discloses the micro-stimulator 20 includes a power

supply and demodulator circuit 94 that filters out the carrier frequency signal and produces a power signal POWER, a data signal DATA and a clock signal CLOCK as shown in Figures 7A-8 of Loeb. See column 13, line 62-column 14, line 3 and column 15, lines 31-46. The information modulated on the carrier frequency in Loeb is being used stimulate the auditory nerve. See column 15, lines 3-29 of Loeb. Applicants respectfully submit that Loeb teaches converting sound to a corresponding data signal DATA, and providing the power signal

A. POWER on electrode(s) 26, 27 using the decoded data signal DATA. Further, Loeb discloses such type of stimulation where needed at a relatively fast rate would be 800 to 1,200 pulses per second for the data signal DATA. See column 14, lines 41-45 of Loeb. Such stimulation is described as a low rate stimulus 1104, shown in Figure 11 of the present specification. Thus, Applicants respectfully submit that the data signal DATA corresponding to sound in Loeb will not be in a frequency range or an inter pulse period that would result in pseudospontaneous activity in the auditory nerve nor would the carrier signal result in pseudospontaneous activity in the auditory nerve. Finally, Loeb does not teach or suggest any modification to its disclosure that would result in at least a feature of a cochlear implant system including a signal generator that generates a second signal capable of causing pseudospontaneous activity in an auditory nerve and combinations thereof as recited in claim 1.

*GII 1707-28
produces
stimulation
pulse*

With respect to claim 3, the Office Action asserts that Loeb discloses the address control word is applied to a subset of electrodes and the modulated power signal is applied to a second subset of electrodes. In contrast, Applicants respectfully submit that Loeb discloses an address

word, which is used to modulate the incoming carrier signal, is stored in holding register 96 and is matched to an address code stored in the memory 98 for a discharge state that enables switch S1 to be open and switch S2 to be closed to discharge a charge held on a capacitor 32 through the electrodes 26, 27. Thus, the address word is not applied to the electrodes 26, 27. See column 14, lines 3-11 and column 15, lines 10-18 of Loeb.

With respect to claims 4-6, the Office Action asserts Loeb teaches the second signal is a high rate pulse train. In contrast, Loeb merely discloses a carrier signal with a frequency between 100 KHz to 50 MHZ. As described above, the carrier signal is filtered out by, for example, the power supply/demodulator circuit 94. As described above, a power signal (e.g., power signal POWER) applied to the electrodes 26, 27 is not capable of causing pseudospontaneous activity as recited in claim 1.

For at least the reasons set forth above, Applicants respectfully submit claim 1 defines patentable subject matter. Claims 11 and 16 define patentable subject matter for at least reasons similar to claim 1. Claims 2-8, 12-13 and 18 depend from claims 1, 11 and 16, respectively, and therefore also define patentable subject matter for at least that reason as well as their additionally recited features. Withdrawal of the rejection of claims 1-8, 11-13, 16 and 18 under 35 U.S.C. §102 is respectfully requested.

C. The Office Action rejects claims 9-10, 15 and 17 under 35 U.S.C. §103(a) over Loeb. The rejection is respectfully traversed.

As described above, claim 1 defines patentable subject matter. Applicants respectfully submit that claims 11 and 16 define patentable subject matter for at least reasons similar to claim 1. Claims 9-10, 15 and 17 depend from claims 1, 11 and 16 respectively, and therefore also define patentable subject matter for at least that reason as well as their additionally recited features. Withdrawal of the rejection of claims 9-10, 15 and 17 under 35 U.S.C. §103 is respectfully requested.

D. Claims 19-31 are newly added by this Amendment and are believed to be in condition for allowance.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney, **Carl R. Wesolowski**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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Enc: Petition for Extension of Time

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Amended Claims With Mark-ups to Show Changes Made

1. (Amended) A cochlear implant system, comprising:
 - a signal generator that generates a second signal capable of causing pseudospontaneous activity in an auditory nerve;
 - a signal processor that combines a first signal that represents sound and the second signal to output a combined signal; and
 - a stimulation unit coupled to the signal processor that receives the combined signal from the signal processor.
2. (Amended) The system according to claim 1, wherein the stimulation unit is an electrode array unit that is coupled to [an] the auditory nerve.
4. (Amended) The system according to claim 1, wherein the second signal [is a high rate pulse train] includes one of (i) a pulse train generating substantially continuous pseudospontaneous activity, (ii) a broad band noise, and (iii) at least fluctuations in amplitude greater than prescribed amount at a frequency above approximately 2k Hz that causes statistically independent activity in a plurality of nerve fibers of the nerve.
5. (Amended) The system according to claim [4] 1, wherein the [high rate pulse train has a frequency above 3 kilohertz and a constant amplitude] pseudospontaneous activity is

demonstrated by statistically independent activity in a plurality of nerve fibers in the auditory nerve.

10. (Amended) The system according to claim 1, wherein a microphone, the signal processor and the signal generator are positioned external to an ear, wherein the stimulation unit is coupled by a wire to the signal processor, and wherein the stimulation unit is coupled to [an] the auditory nerve via a cochlea.

13. (Amended) The method according to claim 11, wherein the first signal represents at least one of speech, emergency signals and control information[, and wherein the second signal is a constant amplitude high rate pulse train with a frequency above 3 kilohertz].

14. (Amended) The method according to claim 12, wherein an inner ear implant [performs] is capable of performing the steps of receiving through applying.

16. (Amended) An auditory prosthesis for receiving an auditory signal representing sound and supplying an electrical signal which is adapted to stimulate the auditory nerve of a person, comprising:

pseudospontaneous generation means for generating a pseudospontaneous driving

transducer means adapted to receive the auditory signal and the pseudospontaneous driving signal for transforming the auditory signal and the pseudospontaneous driving signal to an electrical input signals; and

stimulation means, operatively coupled to the electrical input signals generated by
10 the transducer means, for stimulating the auditory nerve at defined locations within the cochlea,
wherein at least one of the plurality of electrical signals is capable of causing statistically
independent activity in a plurality of nerve fibers of an auditory nerve.

18. (Amended) The auditory prosthesis of claim 16, wherein the pseudospontaneous driving signal [is a high rate pulse train] includes one of (i) a pulse train generating substantially continuous activation, (ii) a broad band noise, or (iii) at least fluctuations in amplitude greater than prescribed amount at a frequency above approximately 2k Hz.